

Full 2025 yield trial dataset located at this link:

General Variety Descriptions: Descriptions are based on performance in multi-year/location yield trials that were grown using recommended conventional wheat farming practices. Actual variety performance may vary, depending on local growing conditions and farming methods. All varieties listed are PVP protected.

CS BRIDGER CLP: (MAES release, 2022): a 2-gene CLEARFIELD hard red winter wheat developed by the Montana Agricultural Experiment Station in 2022 and licensed exclusively to Circle S Seeds. CS Bridger CLP is an early-heading medium-maturity, semi-dwarf with average winter hardiness, average grain protein content, and good test weight. It has very good yield potential over multiple years of evaluations and has performed well in Montana relative to other Clearfield lines in similar environments. CS Bridger CLP has moderate resistance to stripe rust and stem rust. It is a low-PPO variety that has good alkaline noodle quality and above average baking properties. PVP title V has been issued (Certificate #202400210). Additionally the CLEARFIELD genes are patented.

FLATHEAD: (MAES release, 2019): a hard red winter wheat developed by the Montana Agricultural Experiment Station and available to certified seed growers in fall 2019. Flathead is derived from a composite of 2 crosses involving Yellowstone and a Washington State University line, PI 640431, that carries 2 stripe rust seedling resistance genes. Flathead is an early maturing (especially for a Montana line), hollow-stemmed, medium height wheat with white chaff. Flathead has average yield, above average test weight, and average protein, with average winter survival. Flathead out-yields other early maturing varieties, such as Brawl CI Plus (Table 1). Flathead has excellent resistance to stripe rust and is moderately resistant to both stem rust and dwarf bunt. Flathead has medium PPO and above average milling and baking characteristics (Table 3). To be sold by variety name only as a class of certified seed. Montana State University Research Fees due on seed sold. PVP Title V has been issued (Certificate #202000202).

FOUROSIX: (MAES release, 2018): a hard red winter wheat developed by the Montana Agricultural Experiment Station and available to seed growers in fall 2018. FourOsix is a medium maturing, short to medium statured wheat, with average winter-hardiness. FourOsix is a high yielding variety with above average test weight and average protein. FourOsix (50% Yellowstone, in pedigree) is similar in grain yield of Yellowstone, but with significantly earlier heading, shorter plant height, and significantly higher test weight and protein. FourOsix is resistant to stripe rust and this resistance is either similar or significantly higher than that of Yellowstone. FourOsix is moderately susceptible to stem rust. FourOsix has excellent milling and baking qualities, comparable to Decade and parental cultivar, Yellowstone. PVP Title V has been issued (Certificate #201900053).

MT BARRETT: (MAES release, 2025): a hard red winter wheat variety developed by the Montana Agricultural Experiment Station and foundation seeds available to seed growers in Fall 2025. MT Barrett is derived from a cross involving a Kansas variety 'Joe' which has moderate resistance to stripe rust and carries the WSM2 gene for resistance to Wheat streak mosaic virus (WSMV) with a winter wheat breeding line from Montana. MT Barrett carries the WSM2 gene and shows moderate resistance to wheat streak mosaic virus. It has high yields with stable yield performance across years and testing location in Montana. It has good resistance to stripe rust though susceptible to stem and leaf rust. MT Barrett is certified by AOSCA, PVP Title V Pending

NORTHERN: (MAES release, 2015): is a hard red winter wheat developed by the Montana Agricultural Experiment Station and released to growers in 2015. Northern was named to commemorate the 100th anniversary of the Northern Agricultural Research Center (NARC) in Havre, Montana. Northern is a medium-late maturing, medium-short statured wheat, with white chaff. Northern has average yield (similar to Yellowstone and Colter), average test weight, and average protein. Northern is resistant to both stem and stripe rust. Northern has above average milling and average baking properties (Table 3). Northern is a low PPO cultivar with favorable Asian noodle color stability and noodle score. PVP Title V has been issued (Certificate #201600092).

SY CLEARSTONE 2CL: (MAES release, 2012): a 2-gene CLEARFIELD hard red winter wheat developed by Montana Agricultural Experiment Station in 2012 and licensed exclusively to Syngenta Seeds. SY Clearstone wheat 2CL is very similar to Yellowstone. It is a medium maturing, medium tall, white chaffed wheat with average winter hardiness. It is a high yielding wheat with average test weight and protein. SY Clearstone 2CL is resistant to stripe rust and has moderate resistance to stem rust, the latter an improvement over Yellowstone. SY Clearstone 2CL is a medium PPO variety with average mill and above average bake properties. PVP Title V has been issued (Certificate #201300357) Additionally, the CLEARFIELD genes are patented.

YELLOWSTONE: (MAES release, 2005): hard red winter wheat developed by the Montana Agricultural Experiment Station and released to seed growers in 2005. Yellowstone is a very high yielding winter hardy variety with medium test weight, maturity, height, and grain protein. Yellowstone has excellent baking and good Asian noodle quality. It is moderately resistant to TCK smut and resistant to stripe rust, but susceptible to stem rust. Yellowstone has been the leading winter wheat variety planted in Montana since 2012. PVP Title V has been issued (Certificate #200600284).

Table 1: Grain Yield and Agronomic Characteristics of Hollow Stemmed Winter Wheat Varieties (2022-2025)

Varieties	Grain Yield (bu/ac)	Days to Heading (days)	Plant Height (in)	Sawfly Cutting (%)	Test Weight (lb/ac)	Protein (%)	Stripe Rust (%)	Winter Survival (%)
<i>Location x years</i>	29	23	29	6	24	24	3	3
AAC Coldfront	<u>71.1</u>	162	29.7	26.8	60.2	12.7	43.3	91.5
AAC Wildfire	60.4	167	30.1	22.1	58.5	12.9	33.1	93.0
Brawl CL Plus	54.0	158	27.7	30.7	60.8	13.4	70.0	87.9
CS Bridger CLP	66.3	161	26.4	32.8	59.7	13.2	23.4	91.4
Flathead	63.2	159	28.7	29.6	60.1	13.1	9.0	87.5
FourOsix	63.9	163	28.1	26.6	59.4	13.1	29.1	88.2
Keldin	<u>67.0</u>	163	28.8	24.4	59.8	12.6	16.7	85.4
MT Barrett	<u>71.8</u>	160	31.6	27.5	59.6	12.6	9.0	88.4
Northern	<u>66.4</u>	165	29.2	21.1	59.3	13.3	10.0	88.9
Ramsay	65.6	164	28.4	18.2	59.5	12.6	32.3	84.1
SY Clearstone 2CL	62.8	164	31.3	38.4	58.4	13.0	17.2	90.6
Yellowstone	63.3	164	30.7	35.5	59.1	12.9	25.8	89.9
LSD (0.05)	7.7	1.9	0.86	18.4	0.98	0.42	24.9	ns

bold: indicates highest value in grain yield

Table 2: Grain Yield for Hollow Stemmed Winter Wheat Varieties in Each Testing Location (2022-2025)

Varieties	NWARC-Kalispell	PF-Bozeman	SARC-Huntley	CARC-Moccasin	NARC-Havre	Nutrien Ag-Carter	Nutrien Ag-Conrad	EARC-Sidney	NSDU-Williston
AAC Coldfront	165.0	102.1	24.9	54.6	58.1	61.2	28.4	93.1	49.9
AAC Wildfire	146.1	94.7	30.0	53.5	56.0	46.5	26.6	84.5	42.4
Brawl CL Plus	135.1	101.0	38.4	52.0	57.4	45.5	25.0	68.0	29.5
CS Bridger CLP	154.9	110.3	40.2	50.4	58.5	41.9	22.9	88.4	37.4
Flathead	160.3	105.8	34.1	58.3	58.7	47.3	27.8	78.6	34.0
FourOsix	160.9	105.4	32.5	59.6	59.3	47.7	29.4	80.8	40.5
Keldin	163.7	111.9	35.4	55.6	66.9	59.0	24.4	78.8	36.9
MT Barrett	172.9	103.8	28.8	55.3	64.6	57.1	28.1	93.1	54.9
Northern	163.5	108.8	36.6	51.5	59.1	50.1	26.5	85.2	33.4
Ramsay	163.8	118.3	35.0	55.7	64.5	52.4	28.9	78.4	39.5
SY Clearstone 2CL	164.7	97.3	30.0	57.8	58.0	43.7	23.6	79.6	37.6
Yellowstone	157.6	106.6	34.1	58.7	62.3	42.6	25.7	86.8	37.4
LSD (0.05)	13.7	20.4	11.1	ns	19.4	ns	6.9	7.1	ns

Table 3. Milling and Baking Quality of Selected Varieties (2022-2024)

Varieties	PPO	Single Kernel Hardness (%)	Protein (%)	Flour Yield (%)	Mixograph Tolerance	Mixograph Time (min)	Bake Water Absorption (%)	Loaf Volume (CC)
<i>Location*years</i>	<i>9</i>	<i>9</i>	<i>9</i>	<i>9</i>	<i>9</i>	<i>9</i>	<i>9</i>	<i>9</i>
Brawl CL Plus	0.248	75	13.5	69.6	2.75	3.3	70.3	1010
CS Bridger CLP	0.102	82	13.9	69.8	3.00	5.1	73.1	1143
Flathead	0.302	78	13.3	72.0	4.00	6.1	72.8	1053
FourOsix	0.283	78	13.5	71.0	2.25	3.8	71.9	1048
Keldin	0.329	65	13.1	69.7	2.50	3.3	70.5	970
MT Barrett	0.265	75	12.9	68.2	4.25	5.8	71.6	903
Ramsay	0.328	71	13.4	68.9	3.75	3.8	71.2	966
Yellowstone	0.284	78	13.6	69.1	3.75	5.6	74.2	1041
LSD (0.05)	0.06	8.7	0.8	1.5	0.97	4.0	1.5	76.7